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The apparent defect of this method is the uncertainty whether the points, when the image of one is formed close to the other, are equidistant from the lens, the setting of which, or its form unless equally convex on each side, may render actual measurement unsatisfactory. A brief and simple calculation, however, founded upon Cor. 3 to Prop. xlv. of Wood's *Optics*, will show that any uncertainty in the focal length for parallel rays arising from this source of error would be so small in proportion to the corresponding change in the relative position of the conjugate foci, that the needle-points would be obviously and unmistakeably out of their proper places, that is, at very sensibly unequal distances from the lens, before the resulting focal length would be materially affected.

On the other hand, the advantages of this method are easily to be recognised. All errors are eliminated which arise from spherical aberration, the thickness of the lens, or the difference between the length of the marginal and that of the central ray; and the quantity actually measured, being four times greater than the final result, introduces into the latter a microscopical precision; while the actual process of measurement requires nothing but a careful eye, a steady hand, and a little experience, to ensure a degree of accuracy quite sufficient for all practical purposes.

Hardwick Parsonage, Herefordshire,
June 11, 1857.

Astronomical and Meteorological Observations made at the Radcliffe Observatory, Oxford, in the Year 1855, *under the Superintendence of Manuel J. Johnson, M.A., Radcliffe Observer.* Vol. XVI., Oxford, 1856.

The first part of this volume consists as usual of the meridian observations, with the necessary elements for reduction. Then follows a catalogue of stars observed in the year 1855, showing the result of each individual observation. This is succeeded by a catalogue of final results, exhibiting the places of 1149 stars reduced to the beginning of the year 1860, and a catalogue of 164 stars within 6° of the North Pole. The latter contains the mean places of all the stars in the vicinity of the pole reduced to the beginning of 1855, which have been observed at the Radcliffe Observatory during the period comprised between 1840 and 1855, both years inclusive.

The second part of the volume is devoted to the observations with the heliometer and the investigation of the results deducible from them. The parallaxes of a few of the more interesting stars form the object of research. The stars selected are:—*Castor;* the star *b*, employed by Mr. Johnson in his investigation of the parallax of 1830 Groombridge, given in the fourteenth volume of the Radcliffe Observations; *Arcturus;* and, lastly, *α Lyræ.*

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The following are the assumed mean distances between the primary stars and the stars of comparisons:—

Castor	from	2517 B.A.C.	137″·6214
b	from	*a*	101·8972
b	from	*c*	12·7722
Arcturus	from	4731 B.A.C.	43·2572
α Lyræ	from	6319 B.A.C.	39·5807
α Lyræ	from	∗	30·8356

The results for *Castor* seem to indicate a measurable parallax amounting to 0″·198.

The parallax of *b* is found by comparison with *a* to be 0″·037 with a probable error of 0″·119. Assuming, then, as may safely be done, that the stars *a* and *b* have equal parallaxes, Mr. Johnson remarks that the most probable value of the parallax of 1830 *Groombridge* will be obtained by combining together the contemporary measured distances of *a* and *b* from that star. In this way he obtains 0″·033 for the parallax of 1830 *Groombridge* with a probable error of 0″·028; a result almost identical with that at which Otto Struve had previously arrived.

By a comparison with *c* Mr. Johnson obtained for the parallax of *b* the value −0″·298 with a probable error of 0″·156. However he points out several circumstances tending to show that this apparently anomalous result is entitled to very small weight.

For the parallax of *Arcturus*, Mr. Johnson obtains the value 0″·1377 with a probable error of 0″·052.

The value found by Professor Peters is 0″·127 ±0·073. (*Etudes d'Astronomie Stellaire*, p. 99.)

The small probable error in this case, compared with that obtained for *Castor*, seems to Mr. Johnson to indicate that long distances are not favourable to exact measurement.

The parallax of α *Lyræ* by comparison with 6349 B.A.C. is found to be +0″·2703, with the probable error ·0444; by comparison with the un-catalogued star, the result obtained is −0·1127, with the probable error 0″·0697. Combining together the two series of measures in one investigation, Mr. Johnson obtains a parallax amounting to 0″·1412, with a probable error of 0″·0467. Otto Struve gives a parallax equal to 0″·1549 ±·0120, as the combined result of his father's, his own, and Professor Peters' determinations. (*Monthly Notices*, vol. xiii. p. 74.)

The remaining part of the work is devoted to the meteorological operations at the Observatory.

C

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